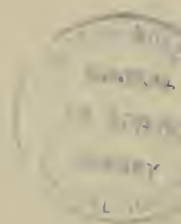


A REVISION OF THE AFRICAN
PONERINE ANT GENUS *PSALIDOMYRMEX*
ANDRÉ (HYMENOPTERA : FORMICIDAE)



BY
BARRY BOLTON

12

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By B. BOLTON

CONTENTS

	<i>Page</i>
SYNOPSIS	3
INTRODUCTION	3
ABBREVIATIONS OF MUSEUMS	4
MEASUREMENT AND INDICES	4
DEFINITION OF THE GENUS	5
LIST OF SPECIES	6
KEY TO SPECIES (Workers)	6
The <i>foveolatus</i> -group	7
The <i>procerus</i> -group	II
ACKNOWLEDGEMENTS	14
REFERENCES	14
INDEX	16

SYNOPSIS

The ant genus *Psalidomyrmex* of the Ethiopian Region is revised. Keys to species and descriptions are presented. Six species are recognised, one of which is described as new, and five new synonyms are established.

INTRODUCTION

Psalidomyrmex is a small, well-defined genus of ponerine ants containing only six species. It is peculiar to the wet forest zones of sub-Saharan Africa, particularly to the rain forest belts of West and Central Africa although some species do occur also in the Ugandan forests and one species is found on the offshore Principe Island, in the Gulf of Guinea.

Nests are constructed in rotten wood, usually in an advanced state of decay, or more rarely directly into the soil beneath a log. Individual foraging workers are found below rotten logs and in deep leaf litter and log mould. The food of the species is not known but the specialized mandibles of both species-groups of the genus imply a specialized diet.

Apart from scattered descriptions of new forms the only previous study of the genus was presented by Wheeler (1922) who gave a distribution map of the genus and a key to the then-known species. In many ways this key is unsatisfactory and in fact breaks down on the first couplet, even when only the species included in it are considered, as *foveolatus* is more closely related to *reichenspergeri* and shares the same mandibular configuration. In his key Wheeler implies that *foveolatus* has a mandibular structure similar to that of *procerus*, which is not the case, and further states that in *foveolatus* the scapes are 'reaching or surpassing the posterior corners of the head', which they do not.

The present paper recognizes two species-groups within *Psalidomyrmex*, each containing three species, based primarily upon the structure of the mandibles. The groups and their constituent species are discussed below.

ABBREVIATIONS OF MUSEUMS

AMNH, New York	American Museum of Natural History, New York, U.S.A.
BMNH	British Museum (Natural History), London, U.K.
IE, Bologna	Istituto di Entomologia dell'Università, Bologna, Italy.
MCZ, Cambridge	Museum of Comparative Zoology, Cambridge, Mass., U.S.A.
MNHN, Paris	Muséum National d'Histoire Naturelle, Paris, France.
MRAC, Tervuren	Musée Royal de l'Afrique Centrale, Tervuren, Belgium.
NM, Basle	Naturhistorisches Museum, Basle, Switzerland.
NM, Bulawayo	National Museum, Bulawayo, Rhodesia.

MEASUREMENTS AND INDICES

Total Length (*TL*). Total outstretched length of the individual, from mandibular apex to gastral apex.

Head Length (*HL*). The straight-line length of the head in perfect full-face view, measured from the mid-point of the anterior clypeal margin (excluding the prominent labral lobe) to the posteriormost point of the occipital margin. (In species with a concave occipital margin the head length is measured to the mid-point of a line connecting the posterolateral projections.)

Head Width (*HW*). The maximum width of the head measured behind the eyes in full-face view.

Cephalic Index (*CI*).
$$\frac{HW \times 100}{HL}$$

Scape Length (*SL*). The straight-line length of the antennal scape excluding the basal constriction or neck.

Scape Index (*SI*).
$$\frac{SL \times 100}{HW}$$

Pronotal Width (*PW*). The maximum width of the pronotum in dorsal view.

Petiole Length (*PL*). The length of the petiole in profile from the anterior process to the posteriormost point of the tergite, where it surrounds the gastral articulation.

Dorsal Petiole Width (*DPW*). The maximum width of the petiole in dorsal view.

Dorsal Petiole Index (*DPI*).
$$\frac{DPW \times 100}{PL}$$

All measurements are expressed in millimetres.

DEFINITION OF THE GENUS

PSALIDOMYRMEX André

Psalidomyrmex André, 1890 : 313. Type-species: *Psalidomyrmex foveolatus* André, 1890 : 314; by monotypy.

Worker. Black or red-brown ants belonging to the tribe Ponerini. Monomorphic but with notable size variation in some species. Lifeway cryptic, with nest sites usually in rotten wood. Size ranges from medium to large, *TL* ca 9.0–16.0.

Mandibles either elongate and falcate, with a concave apical (masticatory) margin which is equipped with a number of short teeth near the basal angle (*foveolatus*-group, Text-fig. 1), or the mandibles subtriangular with an elongate apical tooth, the apical margin more or less straight, edentate (*procerus*-group, Text-fig. 2). In both groups the basal angle is rounded, not acute, and a broad mandibular groove is present which commences laterodorsally and runs down the outer margin of each mandibular blade; the blades cross over at rest. Labrum distinct, prominent, in dorsal view projecting beyond the anterior margin of the clypeus as a rounded, usually transversely striate lobe. Clypeus short, transverse. Palp formula of maxillary 3, labial 4 segments (dissections of *foveolatus*, *procerus*, *reichenspergeri*, *wheeleri*). Lateral lobes of frontal carinae strongly expanded, completely concealing the antennal insertions. Antennae with 12 segments, the second funicular segment usually noticeably longer than the third. Eyes present, usually of moderate size but reduced in some species. Dorsal alitrunk with promesonotal suture distinct, metanotal groove reduced or virtually absent. Propodeal dorsum usually with a median, longitudinal, narrow groove or impression which in some species is also present on the posterior portion of the pronotum. Middle and hind tibiae each with a single pectinate spur, without a smaller, lateral spur. Pretarsal claws simple. Petiole nodiform. Gaster strongly constricted between the first and second segments.

Female. As worker but alate, the alitrunk with a full complement of flight sclerites. Ocelli present.

Male. Mandibles very reduced, edentate, short, roughly rectangular in shape and failing to meet apically at full closure. Antennae with 13 segments, filiform, the scape and first funicular segment short, their combined length less than that of the second funicular segment. Eyes large, ocelli present. Lobes of frontal carinae small, raised, only partially covering the antennal insertions. Alitrunk with a full complement of sutures and flight sclerites. Pronotum strongly developed, not overhung by the mesoscutum in profile. Mesoscutum without notauli, parapsidal furrows present but usually masked by the sculpturation. Scutellum swollen, usually somewhat dome-shaped in profile and with a dorsal, longitudinal impression. Hind wings with anal lobe present. Middle and hind tibiae each with a single pectinate spur, lateral spurs absent. Pretarsal claws with a tooth at or distal to the midlength. Gaster strongly constricted between first and second segments. Pygidium blunt or truncated apically, not produced into a curved spine; hypopygium broadly Y-shaped or bluntly truncated apically with curved lateral angles. Genitalia retractile. Gonopalpi present, usually concealed by the pygidium.

The genus *Psalidomyrmex* is most closely related to *Plectroctena* F. Smith, another genus which is confined to the Ethiopian Region. A discussion of the relationships and derivation of these genera has been presented in a recent revision of *Plectroctena* (Bolton, 1974).

LIST OF SPECIES

foveolatus-group*foveolatus* André*reichenspergeri* Santschi*mabirensis* (Arnold) **syn. n.***sallyae* **sp. n.***procerus*-group*feae* Menozzi*feae* var. *impressa* Menozzi **syn. n.***procerus* Emery*longiscapus* Santschi **syn. n.***obesus* Wheeler **syn. n.***procerus* st. *collarti* Santschi **syn. n.***wheeleri* Santschi

A further species, *clavicornis* Bernard (1952 : 209), has been removed from the genus and transferred to *Bothroponera* as a synonym of *B. talpa* (André) (W. L. Brown, personal communication of paper in preparation). I have examined the holotype female of *clavicornis* (in MNHN, Paris) and concur with Professor Brown.

KEY TO SPECIES

Workers

- 1 Mandibles falcate, the masticatory margin concave and with a number of short teeth, at least near the basal angle (Text-figs 1, 5) 2
- Mandibles subtriangular with an elongate apical tooth; the masticatory margin edentate and straight or nearly so (Text-figs 2, 6) 4
- 2 In dorsal view the first gastral tergite strongly narrowed anteriorly (Text-fig 3). Dorsal surface of first gastral tergite with small punctures, the diameters of which are less than the distances separating them. Petiole longer than broad, *DPI* < 100. Large species *HW* > 2.50, *PW* > 1.70. Full adult colour black. (Uganda, Cameroun, Zaire) *reichenspergeri* (p. 8)
- In dorsal view the first gastral tergite not narrowed anteriorly (Text-fig 4). Dorsal surface of first gastral tergite coarsely foveolate, the diameters of the foveolae equal to or greater than the distances separating them. Petiole as broad as or broader than long, *DPI* 100 or more. Smaller species, *HW* < 2.50, *PW* < 1.70. Full adult colour red-brown 3
- 3 Spaces between foveolae on pronotal dorsum and first gastral tergite densely striate. Antennal scapes relatively short, *SI* < 75. Eyes small, maximum diameter < 0.26. (Sierra Leone, Ivory Coast, Ghana, Nigeria) *foveolatus* (p. 7)
- Spaces between foveolae on pronotum and first gastral tergite unsculptured, mostly smooth and shining. Antennal scapes relatively long, *SI* > 80. Eyes larger, maximum diameter > 0.26. (Ghana) *sallyae* (p. 9)
- 4 Antennal scapes relatively long, *SI* 90 or more (range 90-102); head relatively narrow, *CI* 89 or less (range 84-89); petiole longer than broad, *DPI* < 100. (Cameroun, Zaire) *wheeleri* (p. 13)

- Antennal scapes shorter, *SI* 88 or less (range 79-88); head relatively broad, *CI* 91 or more (range 91-96); petiole broader than long, *DPI* > 100 5
- 5 Expanded lobes of frontal carinae smooth and shining over the site of the antennal insertions, unsculptured apart from a few striae centrally and basally. Median portion of clypeus unsculptured or with transverse striae. (Principe I.) . *feae* (p. 11)
- Expanded lobes of frontal carinae uniformly (but sometimes faintly) striate over the site of the antennal insertions. Median portion of clypeus longitudinally striate. (Ghana, Uganda, Cameroun, Gabon, Zaire) *procerus* (p. 12)

THE *FOVEOLATUS*-GROUP

Characterized by the mandibles which are elongate-falcate and dentate in part.

In the three species constituting this group the mandible has apparently been modified from a basically subtriangular shape into a falciform structure. This has been achieved by the elongation of the apical margin distal to the rounded basal-internal angle. The apical (masticatory) margin has become concave and runs without interruption into the long, curved apical tooth so that the two are in effect a single structure. The apical margin retains short teeth in the part of its length closest to the basal angle, and in some specimens small teeth occur upon the curve of the basal angle itself. The basal portion of the mandible is also somewhat elongated (Text-figs 1, 5).

Of the three species known with mandibles as defined above, two (*foveolatus* and *sallyae*) are closely related, relatively small red-brown species which appear to be restricted to West Africa. The former has a wide range, from Sierra Leone to Nigeria, but the latter is as yet only known from two collections made in Ghana.

The third species, *reichenspergeri*, also has a wide range, but interestingly has not yet been found in any territory in which *foveolatus* is known to occur. The reverse also applies as *foveolatus* is not reported from Cameroun, Zaire or Uganda, the known range of *reichenspergeri*. This last species is larger than its West African counterparts and is black in colour.

Psalidomyrmex foveolatus André

(Text-fig. 4)

Psalidomyrmex foveolatus André, 1890 : 314. Syntype workers, SIERRA LEONE (*A. Mocquerys*) (MNHN, Paris) [examined].

DIAGNOSIS OF WORKER. Mandibles falcate. Antennal scapes with *SI* < 75. First gastral tergite not narrowed anteriorly; the foveolae on this segment and the pronotal dorsum with a dense striation between them. *DPI* 100 or more.

FURTHER DESCRIPTION. *Worker*. *TL* 9.4-10.2, *HL* 1.94-2.12, *HW* 1.68-1.84, *CI* 84-87, *SL* 1.20-1.32, *SI* 66-74, *PW* 1.24-1.32, *PL* 0.84-0.88, *DPW* 0.84-0.92, *DPI* 100-105 (10 measured).

Mandibles falcate, their apical margins with a number of small teeth distal of the basal angle. In some specimens the teeth are acute but in others low and rounded; occasionally teeth occur on the curvature of the basal angle itself. Eyes small, maximum diameter ca 0.16-0.22, distinctly less than the maximum width of the scape. Clypeal suture effaced, very reduced, usually not breaking the sculpture; not visible in more deeply coloured individuals.

General outline of head similar to that of *sallyae* (Text-fig. 5). Promesonotal suture distinct and impressed. Metanotal groove absent, in profile not impressed, the mesonotum and propodeum forming a continuous convexity. In dorsal view the original track of the metanotal groove is visible in some specimens but usually it cannot be discerned, and the dorsal longitudinal sculpture is always unbroken. Propodeal dorsum with a broad, median longitudinal impression or groove, at least posteriorly. The groove is generally broadest posteriorly, narrowing anteriorly. Pronotal dorsum without such a groove. Petiole in dorsal view usually slightly broader than long, with a rounded anterior and transverse posterior face. Dorsal surfaces of body and head with erect hairs, the appendages with hairs on all surfaces.

Sculpture everywhere basically of a dense, longitudinal striation with scattered foveolae. Striate sculpturation is also present on the mandibles, antennal scapes and legs. The expanded lobes of the frontal carinae are for the most part smooth, with striae restricted to the basal and internal portions. On the sides of the alitrunk the striation is finer than on the dorsum, and on the sides of the propodeum may be very fine indeed. Sides of petiole foveolate, the spaces between the foveolae reticulate-punctate. Dorsum of petiole as sides but the sculpture between foveolae much less intense than on the sides, superficial, in places absent on some specimens. Full adult colour a deep red-brown.

Female. As worker but with ocelli, and the alitrunk with flight sclerites. *TL* 10.4–11.6, *HL* 2.08–2.20, *HW* 1.80–1.88, *CI* 85–86, *SL* 1.28–1.40, *SI* 71–74, *PW* 1.48–1.76, *PL* 0.92–1.00, *DPW* 0.96–1.04, *DPI* 104. Maximum diameter of eye 0.30–0.36 (3 measured).

P. foveolatus is the commonest and most widely distributed species of the genus in the West African forest zone, ranging from Sierra Leone to western Nigeria. Nests are made in rotten logs, usually in an advanced state of decay, and workers forage singly either in the log or in the surrounding leaf litter.

P. sallyae, described below, is certainly the species most closely related to *foveolatus*, but the differences separating the two are numerous and are tabulated under *sallyae*. *P. foveolatus* itself appears to show but little variation over its wide range.

MATERIAL EXAMINED.

SIERRA LEONE: no date (ex coll. F. Smith). IVORY COAST: Lamto, Toumodi (*J. Léviéux*). GHANA: Tafo (*B. Bolton*); Tafo, numerous series (*D. Leston*); Legon (*D. Leston*); Kibi (*D. Leston*); Wiawso (*D. Leston*); Asamankese (*D. Leston*). NIGERIA: Ibadan (*Booker*).

Psalidomyrmex reichenspergeri Santschi

(Text-figs 1, 3)

Psalidomyrmex reichenspergeri Santschi, 1913 : 302. Holotype worker, CAMEROUN: Molunda (*A. Reichensperger*) (NM, Basle) [examined].

Plectroctena mandibularis subsp. *mabirensis* Arnold, 1954 : 293 figs 3, 3a. Syntype workers, UGANDA: Mabira Forest, 21.V.1952 (*G. Arnold*) (NM, Bulawayo) [examined]. **Syn. n.**

Psalidomyrmex mabirensis (Arnold); Bolton, 1974 : 334.

DIAGNOSIS OF WORKER. Mandibles falcate. Antennal scapes with *SI* > 75. First gastral tergite narrowed anteriorly, with small punctures but without foveolae. Large species, *HW* > 2.50. *DPI* < 100.

FURTHER DESCRIPTION. *Worker.* *TL* 14.8–15.8, *HL* 3.28–3.48, *HW* 2.80–3.16, *CI* 85–90, *SL* 2.20–2.44, *SI* 76–78, *PW* 1.80–2.20, *PL* 1.36–1.48, *DPW* 1.12–1.32, *DPI* 82–90 (5 measured).

Mandibles falcate and with a number of short teeth on the masticatory margin close to the basal angle. In some specimens the teeth continue onto the curvature of the basal angle.

Sides of head feebly convex, the occipital margin broadly but shallowly concave. Eyes with maximum diameter ca 0.32-0.42, slightly less than the maximum width of the antennal scape. Promesonotal suture strongly impressed. Metanotal groove distinct in dorsal view, impressed in profile and separating the mesonotal convexity from that of the propodeum. Propodeal dorsum with a median, longitudinal groove running from the mid-point of the metanotal groove to the declivity. Petiole in dorsal view slightly longer than broad. In dorsal view the first gastral tergite strongly narrowed anteriorly so the extreme anterior surface is narrower than the posterior face of the petiole node. Erect hairs absent from the mesonotum and propodeum and usually absent from the first gastral tergite although on this surface a few may be present posteriorly.

Dorsum of head coarsely punctate, the spaces between the coarse punctures strongly longitudinally striate. Dorsal alitrunk with scattered coarse punctures, less dense than on the head and tending to be smaller and more numerous on the propodeum than the pronotal dorsum. Spaces between punctures on the pronotal dorsum tend to be smooth and shining although a few striae may be present, especially posteriorly. Mesonotal dorsum generally with weak striation; the propodeal dorsum finely but distinctly striate between the punctures. Sides of alitrunk with scattered punctures and fine dense striation. First gastral tergite with scattered punctures which are smaller than those on the head, the spaces between them mostly smooth but sometimes with very faint, superficial striation. Second gastral tergite as first but the striation much more distinct. Scapes and lobes of frontal carinae not striate. Full adult colour black.

Male. A specimen labelled as the male of *reichenspergeri* (det. Santschi) is present in the Santschi collection (NM, Basle). It bears the data 'Kamerunberg, Soppo 730 m 1912 (v. Rothkirch).'

This specimen differs from others in the genus which I have examined by having a narrow, very broadly Y-shaped subgenital plate, the dorsal arms of which are long and strongly curved. In other males examined, which I attribute to *procerus*, the subgenital plate is broad with short, thick, feebly recurved free angles.

The form of the mandibles relates this species to *foveolatus* and *sallyae* but *reichenspergeri* is larger than both these species and is black. The main characters separating it from its relatives are given in the key to species and the diagnoses.

Arnold (1954) originally described *mabirensis* as a subspecies of *Plectroctena mandibularis* Smith, but his figures and description were sufficient to indicate that *mabirensis* should correctly be placed in *Psalidomyrmex*, where it was later transferred (Bolton, 1974). Examination of the syntypes of *mabirensis* and direct comparison of them with the holotype of *reichenspergeri* now shows that the two names are synonyms.

MATERIAL EXAMINED.

CAMEROUN: no. 1343 (*G. Terron*). ZAIRE: Akenge (*Lang & Chapin*).

Psalidomyrmex sallyae sp. n.

(Text-fig. 5)

DIAGNOSIS OF WORKER. Mandibles falcate. Antennal scapes with $SI > 75$. First gastral tergite not narrowed anteriorly; the foveolae on this segment and the pronotal dorsum without dense striation between them. $DPI > 100$.

FURTHER DESCRIPTION. *Holotype worker.* TL 10.0, HL 2.08, HW 1.76, CI 85, SL 1.48, SI 84, PW 1.36, PL 0.88, DPW 0.92, DPI 104.

Outline shape of head as shown in Text-fig. 5. Mandibles falcate and with a number of short teeth on the apical margin which extend onto the rounded basal angle as low crenulations. Eyes with maximum diameter ca 0.30, about equal to the maximum width of the scape. Clypeal suture effaced, not breaking the sculpturation. Alitrunk in profile with the promesonotal suture strongly impressed, the metanotal groove more weakly so but sufficiently marked to separate the mesonotal curvature from that of the propodeum. In dorsal view the metanotal groove poorly developed but easily discernible. Propodeal dorsum with a median longitudinal groove running from the metanotal groove to the declivity. Pronotum without such a median groove. Dorsal surfaces of head and body with numerous erect hairs, which are also present upon the appendages.

Dorsal and lateral surfaces of head, alitrunk, petiole and gaster foveolate. On the dorsum of the head the spaces between foveolae are faintly longitudinally striate, the striation weak, virtually effaced in places, stronger on the sides of the head below and behind the eyes. Pronotal dorsum without striae between the foveolae although on the mesonotum and propodeum one or two weak striae may be present on the otherwise smooth surfaces. Metanotal groove with a band of short striae which project for a short distance both anteriorly and posteriorly. Sides of alitrunk with spaces between foveolae striate. Sides and dorsum of petiole with fine punctures or superficial reticulation between the foveolae. Gaster with spaces between foveolae unsculptured, both dorsally and ventrally. Mandibles striate; lobes of frontal carinae unsculptured. Full adult colour a deep red-brown.

Paratype workers. As holotype but one a teneral, with head and alitrunk orange-brown, the gaster darker. Dimensions of paratypes: *TL* 9.6-11.4, *HL* 2.00-2.32, *HW* 1.68-2.00, *CI* 83-86, *SL* 1.40-1.60, *SI* 83-85, *PW* 1.32-1.56, *PL* 0.84-1.00, *DPW* 0.92-1.08, *DPI* 104-109. Maximum diameter of eye ca 0.28-0.34 (4 measured).

Holotype worker, GHANA: Tafo, 23.vii.1966, ant ecology sample 120 (*D. Leston*) (BMNH).

Paratypes. GHANA: 3 workers, same data as holotype, one of them also bearing the number 806; 1 worker from the same locality but 19.vii.1966, ant ecology sample 110 (*D. Leston*) (BMNH; MCZ, Cambridge; AMNH, New York; NM, Bulawayo).

This species is very closely related to *foveolatus* and occurs within the range of that species. The following table illustrates the main characters serving to differentiate workers of the two species.

foveolatus

Antennal scapes shorter, *SI* 66-74.
Maximum diameter of eye 0.16-0.22,
less than maximum width of scape.

Metanotal groove vestigial or absent,
not impressed in profile.
Pronotum and first gastral tergite with
strong striation between foveolae.

sallyae

Antennal scapes longer, *SI* 83-85.
Maximum diameter of eye 0.28-0.34,
about equal to maximum width of
scape.

Metanotal groove visible in dorsal view,
impressed in profile.
Pronotum and more especially first
gastral tergite without striae between
foveolae.

THE *PROCERUS*-GROUP

Characterized by the mandibles which are subtriangular with an elongate apical tooth, and with the apical (masticatory) margin edentate.

In this group the mandibles have retained a rather more generalised shape than is encountered in the previous group. The mandibles in *procerus* and its allies are subtriangular, with a long, curved apical tooth which is very broad and appears to be truly a continuation of the mandibular blade. The apical margin proximal to this tooth is more or less straight in full-face view and is edentate, with a fine and quite narrow cutting edge. The basal angle is broadly rounded, and the external margin is somewhat concave at about its midlength. The basal portion of the mandible is not markedly elongate (Text-figs 2, 6).

The three species placed in the *procerus*-group are very closely related, and *procerus* itself is the most variable species yet known in the genus in terms of size, sculpture and hairiness. The least known species, *feae*, has at present only been reported from Principe Island in the Gulf of Guinea, but of the others *wheeleri* is known from Cameroun and Zaire whilst *procerus* is widely distributed in West and Central Africa and also occurs in Uganda.

Psalidomyrmex feae Menozzi

(Text-fig. 6)

Psalidomyrmex feae Menozzi, 1922 : 349. Syntype workers, female, male, PRINCIPE I.: Roça Infante Don Henrique, iii.1901, 100-300 m (*L. Fea*) (IE, Bologna; MCZ, Cambridge) [examined].

Psalidomyrmex feae var. *impressa* Menozzi, 1922 : 352. Syntype workers, male, PRINCIPE I.: Roça Infante Don Henrique, ii.1901, 200-300 m (*L. Fea*) (IE, Bologna; MCZ, Cambridge) [examined]. **Syn. n.**

DIAGNOSIS OF WORKER. Mandibles subtriangular. Expanded lobes of frontal carinae over antennal insertions not striate. $SI < 90$, $DPI > 100$.

FURTHER DESCRIPTION. *Worker*. TL 10.8-12.2, HL 2.08-2.36, HW 1.96-2.24, CI 92-95, SL 1.56-1.80, SI 79-81, PW 1.52-1.68, PL 1.00-1.08, DPW 1.12-1.20, DPI 108-116 (+ measured).

Very closely related to *procerus* and separated from it only by the following.

1. Expanded lobes of frontal carinae smooth and shining in *feae*, striate in all specimens of *procerus* examined.
2. Median portion of clypeus immediately in front of the lobes of the frontal carinae unsculptured or with feeble transverse striae in *feae*, longitudinally striate in *procerus*.
3. Size range in *feae* at lower end of *procerus* range.

As only the type-series of workers and a single queen of *feae* and its absolute synonym *impressa* have been examined the consistency of the characters listed above cannot be guessed. However, in the material examined they serve to separate the two species and it has been decided to retain *feae* as a distinct species until further material becomes available.

Psalidomyrmex procerus Emery

(Text-fig. 2)

Psalidomyrmex procerus Emery, 1901 : 50. Syntype females, male, worker, CAMEROUN (*Conradt*) (NM, Basle) [examined].

Psalidomyrmex longiscapus Santschi, 1920 : 8. Holotype female, GABON: Samkita (*F. Faure*) (NM, Basle) [examined]. **Syn. n.**

Psalidomyrmex obesus Wheeler, 1922 : 92, fig. 19. Syntype workers, ZAIRE: Medje (*Lang & Chapin*) (AMNH, New York; MCZ, Cambridge) [examined]. **Syn. n.**

Psalidomyrmex procerus st. *collarti* Santschi, 1937 : 74. Holotype worker, ZAIRE: Ituri, Matenda, 22.ix.1929 (*A. Collart*) (MRAC, Tervuren) [examined]. **Syn. n.**

DIAGNOSIS OF WORKER. Mandibles subtriangular. Expanded lobes of frontal carinae striate. $SI < 90$. $DPI > 100$.

FURTHER DESCRIPTION. *Worker*. TL 11.4-16.2, HL 2.28-3.20, HW 2.12-3.04, CI 91-96, SL 1.76-2.48, SI 80-88, PW 1.72-2.36, PL 1.08-1.56, DPW 1.24-1.68, DPI 106-118 (20 measured).

Mandibles elongate-subtriangular, edentate (Text-fig. 2). Sides of head convex, the occipital margin impressed medially, the outline shape generally as in Text-fig. 6. Eyes of moderate size, maximum diameter ca 0.30-0.48. Promesonotal suture deeply impressed, metanotal groove varying from a feebly marked line to absent. In some specimens it is more distinct in the middle of the dorsum than laterally but in profile the metanotal groove makes at the most a very feeble impression in the dorsal outline and is often indiscernible. Propodeal dorsum with a narrow, median longitudinal groove, running from the metanotal groove to the declivity. A short, median, longitudinal groove is also present upon the posterior half of the pronotum, but this may be difficult to see in more heavily sculptured individuals. Node of petiole distinctly broader than long in dorsal view. Erect hairs variably present on dorsum of head and body, but apparently always absent from the propodeal dorsum and in many specimens also absent from the mesonotum. Full adult colour black.

Sculpture very variable but mandibles, legs, antennal scapes and expanded lobes of frontal carinae always striate. Head and dorsum and sides of alitrunk always foveolate with striate interspaces, but the density of foveolae and intensity of striation variable. First and second gastral tergites foveolate, the foveolae varying in size, number and depth between individuals and the spaces between them usually feebly striate, although the intensity of striation varies from almost absent to very sharp. On the second tergite the anterior and posterior margins of the individual foveolae tend to be lost, and aligned foveolae run together to form a number of longitudinal impressions separated by raised welts, but again the formation of such sculpturation varies from individual to individual.

Female. Answering to the description of the worker but with ocelli, and the alitrunk with flight sclerites. The queens tend to be somewhat larger than the workers of a given series, but their indices (CI and SI) fall within the worker range.

Male. I have examined four male specimens which I tentatively associate with *procerus* as I have not been able to see the syntype males. These males differ markedly from the male associated with *reichenspergeri* in the shape of the subgenital plate. In *reichenspergeri* this is a narrow, broadly Y-shaped sclerite whereas in *procerus* it is short and broad, with short, thick, feebly projecting free corners which are slightly curved. The plate is thickly T-shaped, with the stem broad and the arms short.

P. procerus is the most widely distributed species of the genus and, outside West Africa, is the species most commonly collected (*foveolatus* appears to be the commonest species in West Africa). *P. procerus* occurs throughout the forest zones of West and Central Africa and is also present in Uganda. Nest sites, as in *foveolatus*, appear to be situated in rotten wood.

I am not entirely convinced that the concept of *procerus* expressed above represents a single species. The great variation seen in the workers could possibly conceal distinct but at present unrecognizable species as not enough material is presently available to show up any consistently differing characters which may be present.

MATERIAL EXAMINED.

GHANA: Tafo (*B. Bolton*); Tafo (*D. Leston*); Kade (*D. Leston*); Mt Atewa (*D. Leston*); Kukurantumi (*D. Leston*). UGANDA: Kawanda (*M. M. Musoke & W. B. Banage*); Kampala (*C. C. Gowdey*); Entebbe (*C. C. Gowdey*). CAMEROUN: Yolé (*G. Terron*); Mt Nkolodon (*G. Terron*); no. 1070 and 1277 (no loc.) (*G. Terron*); Matute (*B. Malkin*). GABON: Plateau d'Ipassa (*J. A. Barra*). ZAIRE: Leopoldville (*Mouchet*); Ituri Forest (*C. P. Haskins*).

Psalidomyrmex wheeleri Santschi

Psalidomyrmex wheeleri Santschi, 1923 : 263. Syntype workers, ZAIRE: Medje, Akenge and Niapu (*Lang & Chapin*) (AMNH, New York; MCZ, Cambridge; MRAC, Tervuren; NM, Bulawayo) [examined].

DIAGNOSIS OF WORKER. Mandibles subtriangular. Expanded lobes of frontal carinae striate. *SI* 90 or more, *DPI* < 100.

FURTHER DESCRIPTION. *Worker*. *TL* 13.6–14.6, *HL* 2.48–2.92, *HW* 2.20–2.60, *CI* 84–89, *SL* 2.00–2.52, *SI* 90–102, *PW* 1.80–1.96, *PL* 1.32–1.40, *DPW* 1.28–1.36, *DPI* 94–97 (8 measured).

Answering to the description of *procerus* but a more slenderly built species with a narrower head, longer antennal scapes and a longer, narrower petiole. Maximum diameter of eye in range 0.36–0.50. In general characters of colour, sculpture etc., *wheeleri* does not separate from *procerus* but the index ranges given below consistently differentiate the two species.

wheeleri

Head narrower, *CI* range 94–89.
Scapes longer, *SI* range 90–102.
Petiole longer than broad, *DPI* range
94–97.

procerus

Head broader, *CI* range 91–96.
Scapes shorter, *SI* range 80–88.
Petiole broader than long, *DPI* range
106–118.

The specimens constituting the type-series of *wheeleri* were first mentioned by Wheeler (1922) who identified them as *procerus*. This series consisted of nine workers from Medje, Akenge and Niapu, in Zaire, and were collected by the Lang & Chapin expedition. Wheeler noted that the specimens were all 'taken from the stomachs of toads (*Bufo superciliaris*, *funereus* and *polycercus*).'

Santschi (1923 : 263) correctly decided that these specimens were not *procerus* but represented a new species, which he called *wheeleri*.

All the nine specimens mentioned by Wheeler were thus to be considered syntypes but to the present have not been labelled as such. I have traced eight of the nine and they are deposited as follows.

AMNH, New York: 2 workers, one 'Niapu, Congo (*H. O. Lang*) stomach *Bufo polycercus*;' the other 'Medje, Congo (*H. O. Lang*) stomach *Bufo funereus*.' (the latter now in BMNH).

MCZ, Cambridge: 2 workers, one 'Medje, Congo (*H. O. Lang*) stomach *Bufo superciliaris*;' the other 'Akenge, Congo (*Lang*) stomach *Bufo polycercus*.'

MRAC, Tervuren: 1 worker 'Musée du Congo; Ituri, Medje 1910 Exp. Lang, Chapin, stomach *Bufo funereus*.'

NM, Bulawayo: 1 worker 'Akenge, Congo (*Lang*) stomach *Bufo polycercus*.'

I have added a circular, blue BMNH 'syntype' label to each of these specimens. The ninth and final syntype has not been located.

A female in MCZ, Cambridge collection has been tentatively associated with these workers as it possesses the indices *CI* 89, *SI* 97, *DPI* 92, and otherwise generally resembles the workers.

MATERIAL EXAMINED.

CAMEROUN: AVOM, 49 (*G. Terron*). ZAIRE: Banzville (*Augustin*); Ituri Forest, vic. Epulu (*T. Gregg*).

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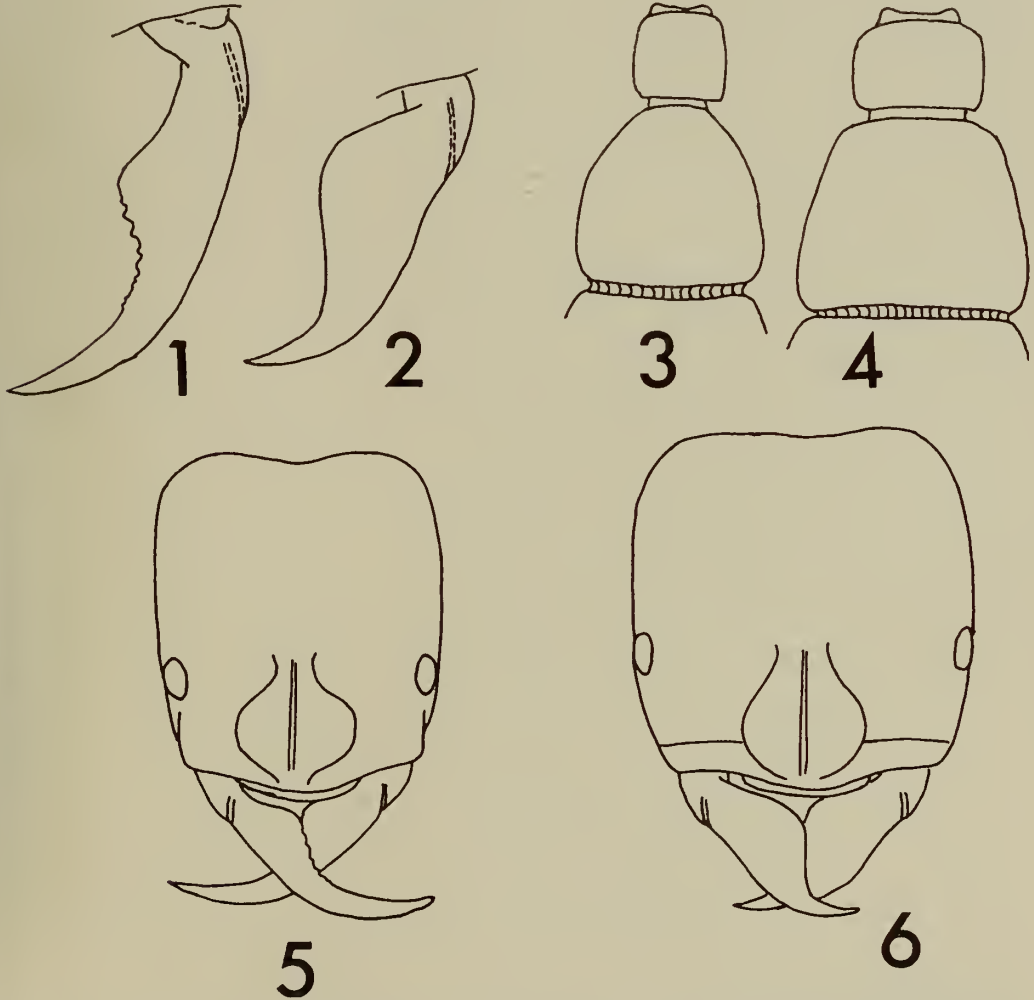
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FIGS 1-6. 1, 2. Left mandible of (1) *Psalidomyrmex reichenspergeri*, (2) *P. procerus*. 3, 4. Dorsal view of petiole and first gastral tergite of (3) *P. reichenspergeri*, (4) *P. foveolatus*. 5, 6. Outline of head of (5) *P. sallyae*, (6) *P. feae*; antennae and pubescence omitted.

INDEX

Synonyms are in *italics*.

clavicornis, 6

collarti, 12

feae, 11

foveolatus, 7

impressa, 11

longiscapus, 12

mabirensis, 8

obesus, 12

procerus, 12

reichenspergeri, 8

sallyae, 9

wheeleri, 13